

The following is a complete listing of all claims in the application, with an indication of the status of each:

Listing of claims:

1 1. (Canceled)

1 2. (currently amended) A decoding apparatus comprising:

2 reception means for receiving data on a dedicated physical control
3 channel and data on a dedicated physical data channel, which are coded into a
4 complex code of a single system which is to be transmitted as an uplink signal
5 from a mobile unit to a base station in a 3rd generation cell phone system, said
6 complex code including a quadrature code representation of Transport Format
7 Combination Indicator (TFCI) information contained within said control
8 channel data;

9 TFCI decoding characteristic feedback means for using quadrature
10 correlation characteristics of said quadrature code to determine TFCI decoding
11 characteristics of a coded TFCI code on the dedicated physical control
12 channel; and

13 dedicated physical data channel correcting means for performing data
14 correction for the dedicated physical data channel on the basis of a
15 determination result on the TFCI decoding characteristics, and

16 ~~An apparatus according to claim 1,~~ wherein said TFCI decoding
17 characteristic feedback means comprises

18 dedicated channel control means for controlling a dedicated channel,
19 outputting a TFCI count corresponding to a service, and outputting a decoding
20 parameter corresponding to a received TFCI value,

21 data correcting means for processing a correction value calculated
22 from TFCI decoding characteristics of a dedicated physical control channel

23 with respect to data on a dedicated physical data channel which is received
24 from a mobile unit,
25 de-interleave rate de-matching means for channel-decoding an output
26 from said data correcting means on the basis of a decoding parameter from
27 said dedicated channel control means, and
28 error correcting/decoding means for decoding an output from said
29 deinterleave rate dematching means while performing error correction for the
30 output to obtain decoded data on the dedicated physical data channel, and
31 said dedicated physical data channel correcting means comprises
32 symbol data determining means for extracting/separating a TFCI code
33 from data on a dedicated physical control channel,
34 soft decision TFCI decoding means for TFCI-decoding a TFCI code
35 output from said symbol data determining means on the basis of a TFCI count
36 from said dedicated channel control means, transmitting an obtained TFCI
37 value to said dedicated channel control means, and outputting correlation
38 values with a Walsh quadrature vector at the time of TFCI decoding,
39 correlation value characteristic storage means for sequentially storing
40 correlation values output from said soft decision TFCI decoding means, and
41 correction value calculating means for determining TFCI decoding
42 characteristics from a plurality of correlation values stored in said correlation
43 value characteristic storage means, calculating the correction value, and
44 outputting the correction value to said data correcting means.

1 3. (original) An apparatus according to claim 2, wherein said soft decision
2 TFCI decoding means comprises
3 data interchanging means for changing a data order of a reception
4 TFCI code to allow the code to be subjected to fast Hadamard transform as a
5 Walsh quadrature vector,

6 a mask code correlation table which is a code table of 16 combinations
7 of mask codes in a TFCI code which are obtained by mod2 addition,
8 mask code correlation calculating means for calculating a correlation
9 between an output code from said data interchanging means and said mask
10 code correlation table,
11 fast Hadamard transform means for performing Hadamard transform
12 of a code output from said mask code correlation calculating means,
13 peak correlation value determining means for determining an absolute
14 peak value of Hadamardtransformed data output from said fast Hadamard
15 transform means, performing positive/negative determination on the peak
16 value, and determining an index thereof to obtain correlation values with a
17 Walsh quadrature vector at the time of TFCI decoding, and
18 TFCI determining means for determining a TFCI value from a
19 determination result from said peak correlation value determining means.

1 4. (Previously presented) An apparatus according to claim 3, wherein said
2 soft decision TFCI decoding means further comprises
3 TFCI code generating means for generating a TFCI code from a TFCI
4 value obtained by said TFCI determining means,
5 hard decision TFCI code comparing means for comparing a TFCI code
6 generated by said TFCI code generating means with a TFCI code input to said
7 soft decision TFCI decoding means to determine whether an error has
8 occurred, and
9 said correction value calculating means controls calculation of the
10 correction value in accordance with an error determination result obtained by
11 said hard decision TFCI code comparing means.

1 5-7. (Canceled)

1 8. (Currently amended) A decoding method comprising:

2 the first step of receiving data on a dedicated physical control channel
3 and data on a dedicated physical data channel, which are coded into a complex
4 code of a single system which is to be transmitted as an uplink signal from a
5 mobile unit to a base station in a 3rd generation cell phone system, said
6 complex code including a quadrature code representation of Transport Format
7 Combination Indicator (TFCI) information contained within said control
8 channel data;

9 the second step of using quadrature correlation characteristics of said
10 quadrature code to determine TFCI decoding characteristics of a coded TFCI
11 code on the dedicated physical control channel, wherein the second step
12 comprises

13 the step of extracting/separating a TFCI code from received
14 data on a dedicated physical control channel,
15 the step of TFCI decoding the TFCI code, obtaining correlation
16 values with a Walsh quadrature vector, and sequentially storing
17 the correlation values,
18 the step of determining TFCI decoding characteristics from a
19 plurality of stored correlation values,
20 the step of calculating a correction value for data correction on
21 the dedicated physical data channel,

22 ~~A method according to claim 7, wherein the second step~~
23 ~~comprises~~ the step of changing a data order of a reception TFCI
24 code to allow the code to be subjected to fast Hadamard
25 transform as a Walsh quadrature vector,
26 the step of calculating a correlation between the TFCI code
27 after interchanging and a preset code table of 16 combinations

28 of mask codes in a TFCI code which are obtained by modulo 2
29 addition, and performing fast Hadamard transform, and
30 the step of determining an absolute peak value of Hadamard-
31 transformed data, performing positive/negative determination
32 on the peak value, and determining an index thereof to obtain
33 correlation values with a Walsh quadrature vector at the time of
34 the TFCI decoding; and
35 the third step of performing data correction for the dedicated physical
36 data channel on the basis of a determination result on the TFCI decoding
37 characteristics.

1 9. (original) A method according to claim 8, wherein the second step
2 comprises
3 the step of generating a TFCI code in accordance with a TFCI value
4 obtained from determination results on the absolute peak value of Hadamard-
5 transformed data, positive/negative decision on the peak value, and the index
6 thereof,
7 the step of determining the presence/absence of an error by comparison
8 with the reception TFCI code, and
9 the step of controlling calculation of the correction value in accordance
10 with the error determination result.

1 10. (currently amended) An apparatus according to claim 2 [†], wherein said
2 apparatus further comprises reception Signal-to-Interference Ratio (SIR)
3 measuring means for measuring a reception SIR from a known pilot symbol
4 on the dedicated physical control channel, and
5 said dedicated physical data channel correcting means performs data
6 correction for the dedicated physical data channel on the basis of a

7 determination result on the TFCI decoding characteristics and the
8 measurement result on the reception SIR.

1 11. (Canceled)

1 12. (currently amended) A method according to claim 8 6, wherein the
2 method further comprises the step of measuring a reception Signal-to-
3 Interference Ratio (SIR) from a known pilot signal on the dedicated physical
4 control channel, and
5 in the third step, data correction is performed for the dedicated
6 physical data channel on the basis of the determination result on the TFCI
7 decoding characteristics and the measurement result on the reception SIR.